Operational Requirements Document (ORD) to provide Real Time Information to the Cockpit (ABI)						
Requirement	**Comment**	**Spiral Phase**				
		1	**2**	**3**	**4**	**Vara/Def**
1. General Description of Operational Capability						
1.a. Mission Areas. The primary mission areas supported by this ORD are airlift and air refueling.						
1.b. Type of System Proposed. The system will provide a carry-on/carry-off capability to receive simultaneous information broadcasts via radio, a portable computer system, and a 1553 avionics databus interface to a cockpit control/display. ABI will serve as a force multiplier and enhancer by providing accurate, timely, and consistent mission essential information and mission replanning capability in airborne aircraft worldwide. The ability to dynamically display and avoid threats is essential to successful air mobility operations. To obtain this capability, we must field a system simultaneously providing enemy offensive and defensive threats, mission route and drop/landing zone weather updates, friendly force locations, and C2 data to the review. The system must be affordable to acquire, operate, and maintain.						
The acquisition strategy will be a non-developmental initiative.		C	C	C	XT	To the greatest extent possible system will be procured as NDI/COTS
The entire system will be designed to be internally expandable/upgradeable.		C	C	C	XT	
System control will be through a computer input/output device (i.e., keyboard, joystick, mouse, touch pad/screen, or voice-activated device).	(XT) is Keyboard, pointing device and/or touch pad/screen (XO) voice	C	C	C	XT	Capability operational at phase 2 continuously improve these devices based on user feedback achieve (XO) in spiral 5 or 6
Flat panel displays will be used to save space, weight and provide the user a variety of installation locations (they are easily placed along the sides of the cockpit).		C	C	C	XT	Capability operational in Phase 1 Program continues to improve weight, form factor based on target platform/user needs

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System will use existing hard mounted or hatch mounted global positioning system (GPS) and satellite communication (SATCOM) antennas wherever possible.	(XT) use existing hatch mounted/hard mounted antenna(s) (XO) supply antenna with Kit	C	C	C	XT	UHF/GPS antennas are not standard and in some applications not available as GFE
When these options are not available, suitable antennas will be programmed for.		XT	XT	XT	XT	Planned single ground based antenna to be included with every three units (option)
c. Operational and Support Concept The system (1T) will have the capability of being quickly powered on and ready to use on AMC aircraft in less than 15 minutes (threshold, (1O) although 10 minutes is desirable (objective.).		1T	-	-	-	Power on, and operational
Threat data base information can be compiled on the Constant Source/Combat Intelligence System (CIS) at home base and provided to the Air Force Mission Support System (AFMSS) to generate the mission plan. This plan, along with the latest threat database, is input to the aircraft avionics and ABI (RTIC) system(s) via the 1553 databus or a data transfer device (DTD) (i.e. laptop computer).	Aircraft input devices are different from ABI interfaces. This is due to a Non-violation requirement of the certified Aircraft interfaces. Using DTDs will be an Objective during integration into specific platforms	C	C	C	XO	Capability operational in Phase 2 1553 or 429 interface XO in P5
Additionally, the ABI system will have the capability to accept inputs from the CIS directly.		C	C	C	XT	Capability operational in phase 2
These system updates will have the capability to be (2T) updated either from a direct connection, a floppy media, or typed in manually, (2O) and by broadcast (objective).		2T	-	-	2O	Additional work planned to broaden capability
An aircrew member will use the ABI system to determine status of known en route threats, monitor for unknown pop-up threats, use the awareness display to determine the optimum routing for threat avoidance, replan if		C	C	C	XT	Inclusion of PFPS in phase 4 will expand this area

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required and monitor other system information for successful mission accomplishment.						
Air Force two-level maintenance (organizational and depot support) will apply.		ND	C	C	XT	
Malfunctions will be isolated to the line replaceable unit (LRU) level using fault isolation software.		C	C	C	XT	
d. Mission Need Statement (MNS). AMC, as stated in the AMC Combat MNS 002-92, Airborne Situational Awareness and Imagery Receipt Capability, and CAF MNS 315-92, Real Time Information in the Cockpit, requires a system to provide airborne aircrews and essential offboard information to allow mission adjustments in response to rapidiliy changingcombat conditions while in flight.		**N**	**N**	**N**	**N**	
e. Future System Architecture. The carry-on/carry-off concept is designed to eliminate the need to modify each aircraft, yet still allow a system capability on any tail number in any aircraft fleet. However, with ongoing cockpit modernization programs such as Pacer CRAG and the move toward glass cockpits,		**XT**	**XT**	**XT**	**XT**	
This system should be able to integrate with the cockpit of the future in order to maximize its utility.		XO	XO	XO	XO	Basic design guidance
The system should be compatible with other existing and planned aircrew operations, communication, and mission planning systems that require carry-on computer interface to eliminate the need for multiple carry-on computers in the cockpit. If possible these other systems will be able to run on the ABI system computer, or the ABI software will be run on a computer supplied by these other systems.	DII/COE Migration AWACS integration WR C-17 Demo PFPS Software	XO	XO	XO	XO	Basic design guidance
2. Threat. a. Operational Threat Environment. Any radio signal is susceptible to hostile and casual intercept and exploitation, including jamming. Other threats are those that will affect the host platform for ABI equipment and are found in platform specific documents. They include air-to-air, surface-to-air, air-to-surface, and surface-to-surface weapons systems. **b. System Specific Threats.** N/A		**N**	**N**	**N**	**N**	

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c. Reactive Threats. N/A **d. Targets.** N/A						
Shortcomings of Existing Systems. Systems currently exist to supply certain forms of intelligence to the cockpit; however, each has shortfalls in capability required to meet operational needs. These current systems have all been acquired based on specific, service-oriented, operational requirement documents. This resulted in development of systems for service-or-command-unique missions. The system proposed by this ORD will provide all the required capabilities in a single compact system, which satisfies command operational requirements.		**N**	**N**	**N**	**N**	
Joint Tactical Information Distribution System (JTIDS). JTIDS provides tactical digital information links (TADIL-J) information in a graphical display, but does not provide tactical receive applications (TRAP) or Tactical Information Broadcast System (TIBS) broadcasts.		**N**	**N**	**N**	**N**	
Multi-mission Advanced Tactical Terminal (MATT) MATT is a UHF radio that receives TRAP and TIBS broadcasts, but not TADIL-J information. AFSOC's control of MATT and navigation display operations (COMANDO) uses a MATT radio with a PC-based Windows system to provide a moving cursor display over charts only. COMANDO graphically displays only TRAP and TIBS data.		**N**	**N**	**N**	**N**	
d. Joint Tactical Terminal (JTT) The JTT program is an attempt to consolidate many of these efforts and provide a migration path for future development. Any radio equipment under the ABI program should follow this established migration path.		**N**	**N**	**N**	**N**	
e. Air Force Mission Support System (AFMSS). The AFMSS program furnishes mission planning/replanning ability but lacks the required threat data incorporation capability.		**N**	**N**	**N**	**N**	
f. Situational Awareness and In-flight Replanning (SAIFR) system. SAIFR is a software prototype, which incorporates CIS/AA threats into AFMSS architecture. It provides in-flight update capability but lacks TADILA/J capability.		**N**	**N**	**N**	**N**	

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4. Capabilities Required. System performance and capabilities during wartime and peacetime are the same. Specific broadcast intelligence information required and system capabilities and characteristics are listed below.		**C**	**C**	**XT**	**XT**	**Basic Design Guidance**
a. Near Term Requirements (1 year) (3T) The following near term requirements must be met prior to the Multi-source Tactical System (MSTS) program termination (threshold). MSTS funding is now scheduled for termination in FY 97.		**3T**	**3T**	**3T**		
(1) Provide a product based on existing Air Force owned software and hardware to the maximum extent possible. The product shall follow (or exceed) planned theater battle management core systems (TBMCS) architecture requirements.		**3T**	**3T**	**3T**		
(2) Provide a multichannel, secure, interface capability for any radio complying with at least the RS232 serial interface protocol.		**3T**	**3T**	**3T**		Zebra in P1, MATT in P2, **JTT in P 4**
(3) Receive, load, store, select, and display National Imagery Transmission Format (NITF) imagery, standard National Imagery ands Mapping Agency (NIMA) digital navigation charts and digital elevation data to produce multilayer depiction's of en route conditions and objective area operations.		**3T**	3T	**3T**		
(4) Provide a working generic interface to receive and display global positioning system position data for locating current aircraft position and threat position.		**3T**	3T	**3T**		
(5) Provide the ability to receive , process, and display stored threat data and near-real time (NRT) order of battle updates derived from (at least) the TIBS, TRAP, and TADIL-A broadcasts to a geolocation or Track on Global Navigational Charts (GNC), Jet Navigational Charts (JNC), Operational Navigational Charts(ONC), Tactical Pilotage Charts (TPC), and Joint Operational Graphics (JOG) charts and imagery		**3T**	3T	**3T**		
(6) Display aircraft route and current position and heading superimposed as moving icons on a selectable map background with an "along track,		Trk Up Only	-	**3T**		

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track up" Orientation.						
(7) Correlate and display threats in NRT, to enable the aircraft's route to be changed around threat specific ground and naval threat radar rings. Display ground, naval, and air-to-air missile maximum effectiveness radius of action (MERA) rings, even when threats are located off screen. All displayed threat information and symbology shall comply with identified standards.		partial	**3T**	**3T**		
b. Long-term System Performance Requirements (beyond 1 year)						
(1) The ABI system must be able (4T) to support data (threshold) and (4O) voice interactive instruction set (objective).		4T	-	-	-	
(2) The system must be able to simultaneously receive broadcast information from satellites and theater platforms by continuously monitoring messages on selected nets.		C	-	-		
The system (5T) will be capable of receiving strategic, tactical, and national information into the cockpit such as Tactical Data Dissemination System (TDDS), broadcasts to include TRAP, TADIXS-B, TIBS and be capable of receiving TADIL-A/J information (threshold). (5O) Receipt of the TRIXS and Officer in Tactical Command Exchange System (OTCIXS) broadcasts are objectives.		5O no J	-	-	-	Tadil-J in P5 or 6
The purposed system's software must use legacy assets as much as possible and be capable of handling the various message formats of each signal regardless of what imbedded hardware capability is available.		C	C	C	XT	
The system must allow for near instantaneous screen updates (full motion video) to process incoming information. Volume of data will increase significantly upon deployment of TDDS. The system must allow for future dissemination methods and the subsequent correlation of the information	2 measures - 2d/3d 5 frms/sec - info throughput 30 tracks/sec	C	C	C	XT	
The proposed system will not be purchased in sufficient quantities to equip every aircraft; however, the information is valuable to all formation aircraft operating on a mission. (6O) An intraformation data communications capability (objective) will allow the master to transmit screen information to all formation members in a master-slave		-	-	-	-	Outyears (6O)

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		1	2	3	4	Vara/Def
configuration						
(7T)Threat information, along with the viewers own position, will be displayed on a video screen moving cursor/map (threshold) display driven by high precision global positioning system (GPS) time and position information for both planned and current position. This information will be used to replan the mission in flight.		7T	-	-	-	
(7T)The system operator will be able to control displayed threat information through a series of selectable data filters and icons using standard DoD symbology (threshold).		8T	-	-	-	
3) (9T) The system will be capable of receiving and displaying secondary imagery to include weather updates (threshold). (9O) It will also have the ability to receive video broadcasts (objective).	What source provides weather? Is this an additonal radio interface? KG-84 use of the radio receiver channels for weather	9T 9O	-	-	9O	
4) (10T) The radio will be able to receive P(Y)-coded GPS data (threshold),		10T	-	-		Customer has concurred that commercial GPS is adaquate after demonstration of Mil GPS capabiliity
(11T) Receive UHF Satellite Communication (SATCOM) data (threshold), (11O) transmit/receive single channel ground and airborne radio (SINCGARS) capability (objective) and transmit UHF SATCOM voice and data (objective) to include Demand Assigned Multiple Access (DAMA) as mandated in CJCSI 6251.01.		11T	-	-	-	Possible 11O in P5
(12O) It will also have a low probability of intercept/detection wireless data link to allow the display to be shared between aircraft and ground systems.		-	-	-	-	12O may be served by JTIDS, Combat track, or like function

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The system will share antenna usage wherever possible, vis diplexing or some other solution, thereby avoiding conflicts with other radio applications.		XT	XT	XT	XT	
(5) (13T) The radio must be capable of cryptologic adaptation and be capable of exchanging information at the secret/collateral level (threshold). (13O) Cryptological materials should be embedded and keying materials also embedded with an external device, which activates the current key (objective).		13T	-	-	-	Remaining part of 12O Keying device will need to wait for NSA solution
(14o)an objective is to have a single-key device (i.e., STU III-type key, PC card, over the air) to load/energize the appropriate crypto.		14T CZY-10	-	-	-	CZY-10 is the closesest at this time
(6) (15T) The system will have a removable data storage capability of holding a theater sized database to include all available mapping, charting, geodesy, and imagery (MCG&I) products (threshold), (15O)with a goal of holding the digitized products of the world.	How does this track to the requirement to be able to sanitize the system if compromised?	15T 18Gig	-	15T	15t 50Gig	15T – 18 G capacity in Phase 1 Move to 50 G in phase 3 or 4 15O – may be possible in later phases
The removable storage media must be capable of holding imagery without removing any required DMA charts from the storage media.		C	C	C	XT	
The digital maps will conform to standard WGS-84 reference system. MCG&I products required include all GNC, JNC, ONC, TPC, digital terrain elevation (DTED), digital aeronautical flight information file (DAFIF) information and two theaters worth of coverage in JOG charts from DMA's worldwide database of charts. Joint Operational Graphics (JOG) charts from DMA's worldwide database of charts. The charts will use electronic chart updates to plot changes in high obstruction data.		C	C	C	XT	
(7) The system will employ standard DMA mapping, charting, and geodesy (MC&G) products.		C	C	C	XT	
(8) (16T) The radio will be no larger than a standard 3/4 air transportable rack (ATR) and, with mount, be two-person portable (threshold).		16T QNET	16T MATT	1T		Tall or long allowable Future

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						JTT/CIBS-M in FY 00 -01
(9) (17T) System installation on AMC aircraft will require no more than two people and be installed in 15 minutes (threshold) (17O) with less than 10 minutes as an objective, assuming GPS and SATCOM installed.		17T	17T	17T		
(10) (18T) The system will be capable of being powered by both standard aircraft power (115VAC, 400 Hz) and ground power (110 and 220VAC, 50-60 Hz) (threshold), (18O) and also by 28 VDC aircraft power (objective).		18T	18O	18O		
Units will include a worldwide adapter plug kit.		XT	N	C	XT	
A global, uninterruptable power source will be required to allow for continuous power during power down procedures. The radio will have an internal, rechargeable battery back up capable of holding critical components (i.e., cryptological keys) for at least 30 minutes. System must warn aircrew via display when operating on back-up power.		C	C	C	XT	Customer has concurred that a 20 minute battery in radio is adequate
(11) The system will be controlled through a computer input/output device (i.e., keyboard, trackball, touch pad/screen, joystick, voice-activated device, etc.).	only the functions of the ABI, excludes radio and crypto,	C Keybd mouse	C Keybd mouse	C Kybrd trkbl	XT	Basic system – Key board, track ball, touch pad, Voice is an (O)
The aircrew must be able to operate throughout the mission profile while wearing flight gloves, cold weather, or chemical and biological (NBC) protection gear.		XT	XT	C	XT	
(12) The system will display a complete situational awareness picture to include threat information onto three or more flat panel display simultaneously. These displays will be capable of being easily positioned throughout the aircraft.	"Easily" read "velcro" or other "quick"install Techniques,	C 16" pnl	C Fixed mnting	C 13" pnl	XT	Customer has defined system as 2 flat panel displays, However, system can drive more
(13) (19T)Control and display devices must be compatible with night vision goggle use (threshold).	Defined as not impacting use of Night Vision Goggles in other parts of mission	19T	19T	19T		
(14) The resulting system must be compatible with the following AMC aircraft: C-5, C-141, C-17, KC-10, C-130, and KC-135		C	C	C	XT	We need to do sight survey on each type of

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Requirement	Comment	Spiral Phase				
		1	2	3	4	Vara/Def
						platform. What are the lessons learned from MSTS?
(15) Software Considerations (a) Screen display. The (ABI) must have the capability to generate, in either a single or multiple-windowed screen; DMA's world data bank II country outline map, standard DMA MC&G digital products, or NITF imagery.		C	C	C	XT	
The multi-windowed scenes must be linked through geographic coordinates with correlated symbology overlaid on each scene.		C	C	C	XT	
Each window must be user selectable.		C	C	C	XT	
And have the capability to independently display different scale charts or images (all correlated).		C	C	C	XT	
The ABI shall permit the operator to zoom in or out on any DMA product. During this zoom, ABI shall seamlessly switch to the next scale chart, maintaining adequate clarity of the image.		C	C	C	XT	
Additionally, the ABI shall allow the operator to display a three dimensional, fly-through capability (similar to AFMSS) using DMA DTED overlaid with multi-spectral NITF or DMA MC&G images.		C	C	C	XT	
The system shall also display waypoints, threat areas, no-fly zones, route of flight, and GPS-referenced aircraft present position.		C	C	C	XT	
The screen data should default to an unclassified display, with a password required to deactivate this screen saver"		XT	XT	C	XT	Coordination with customer and security has defined solution
(b) Correlation. Standard Defense Intelligence Agency (DIA) electronic order of battle (EOB) shall be used along with the ground, air, and navy orders of battle (OB). The available OB will be operator selectable to display any together or separately.	CIS/TBMCS standards to drive design	C	C	C	XT	
The ABI must present the threats as geographically symbols on a display.		C	C	C	XT	
(20T)Multiple indications of the same threat must be correlated into a single icon (threshold).		20T	20T	20T	-	
System must use standard symbology and allow the operator to selectively		C	C	C	XT	

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filter the desired symbols either by type or by geographical area.						
When a new threat appears on the display, it shall momentarily be highlighted (flash or blink for 15 seconds) to increase it's visibility.		C	C	C	XT	
DIA's official EOB shall be selectively displayed.		C	C	C	XT	
Archive EOB data shall be a different color than active threats.		C	C	C	XT	
ELINT notations (ELNOT) must be selectively displayed, in the form of a pop-up window highlighted by the operator, to enhance the weapon system/emitter symbology generated by ABI. Air order of battle (AOB) systems will be displayed with worst case air-to-air missile threat associated with that specific aircraft and the missiles maximum effective radius of action (MERA). A MERA ring will be displayed around that aircraft and move as the aircraft moves, reflecting its capabilities against our tanker/airlift assets.		C	C	C	XT	
The system must be capable of loading training EOB (simulated data) manually, from CIS or from AFMSS.		XT	C	C	XT	
c) Threat Overlays. The ABI must display threat "threat acquisition and target tracking radar range" rings based on aircraft altitude and terrain.		C	C	C	XT	
In the 3D fly-through mode radar and line-of-sight ranges shall be constrained based on aircraft altitude and location and DTED supplied by the system database.		C	C	C	XT	check
(d) Airborne Enroute Planning. The operator of ABI should be able to graphically or textually modify the current route of flight while en route.		C	C	C	?	Manual , drag and drop, simple rerouter
(21O) When the flight plan is modified using the inertial navigation system (INS) or flight management system (FMS) these updates must also be provided to ABI (objective).		21O mnual	-	-		21O manual in P2, automated will require integration into aircraft
The operator should be able to modify the flight plan by graphically dragging a previously entered waypoint, manually entering or deleting coordinates, or by dragging an existing route segment to a new location.		C	C	C	XT	
The system will have the capability of automatically selecting the best route of flight based on the threat.		XT	XT	XT	XT	Possible with incorporation of AFMSS subsystem in P4

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(e) Slewing. The ABI should have a slew capability on any displayed scene. This will allow the operator to look ahead, behind, and side to side.		C	C	C	XT	
This capability will be used to analyze DMA digital charts, terrain data, route of flight, threats, etc.		N	N	N	N	
The scene should return to the aircraft's present position when the slew function is deselected.		C	C	C	XT	
In addition to the slew capability, the integrated system must have the capability to center the displayed image on a specific area when directed by the operator.		C	C	C	XT	
(f) Feature Deselect. The ABI system should have the capability to deselect or reduce the amount of symbology either by time, region, or by type (air, ship, ground, civil, unknown, etc.).		C	C	C	XT	
(g) Coordinate System. The ABI must accommodate both universal transverse macerator (UTM)/ military grid reference system (MGRS), GPS latitude/longitude data and geo-coordinated data as selected by the aircrew. The primary reference system for the ABI will be World Geodetic System 84 (WGS-84).		C	C	C	XT	
(h) Historical Data. The ABI shall be capable of storing and downloading all threat data collected over a mission of 14-hours duration.		C	C	C	XT	
Additionally, ABI must have a screen save feature to allow the operator to create snap-shots of desired screens for mission debriefing.		C	C	C	XT	
Storage capacity shall allow for 100 snap-shots.		C	C	C	XT	

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		1	**2**	**3**	**4**	**Vara/Def**
b. Logistics and Readiness. (1) Performance. (a) Operational Availability (Ao). The system must perform in flight environments from ground level to 40,000 ft. (cabin altitude 8000 feet) 95 percent of the time, assuming an airborne mission of 6 – 24 hours. Equipment must not negatively impact current mission accomplishment. (22T) This system must be physically able to withstand an explosive decompression from 40,000 feet (threshold) with no fragmentation danger to the aircraft or personnel		22T	-	-	-	
b) Mean Time Between Maintenance-Inherent (MTBM-I). (23T) The MTBM-I must be at least 550 hours (threshold), (23O) with 650 hours desired as an objective. System is designed to be operated in an aircraft or on the ground as a stand-alone unit, and the MTBM-I applies to both operating environments.		23T	23O	23O		Best Commercial
(c) Mean Repair Time (MRT). The MRT is the average on- or off-equipment corrective maintenance time required completing a corrective maintenance action (including access time). (24T) MRT shall be less than 30 minutes in an operational environment (threshold), (24O) with 20 minutes desired (objective).			23T AWAC	23T AMC		
d) Built In Test (BIT). BIT shall also be used for detection and fault isolation to the maximum extent possible. (25T)BIT shall be able to fault isolate to one LRU 95 percent of the time (threshold), (25O) with 100 percent desired (objective).			25T	25T		Best commercial
With the combination of BIT, technical manuals, and manual test, (26T) there shall be at least 99 percent failure detection and isolation (threshold), (26O) with 100 percent desired (objective).		26T	26T	26T		Best Commercial
(27T) The percentage of false alarm indications from the BIT shall not			27T	27T	XT	Best Commercial

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exceed 2 percent of all failures indicated (threshold), (27O) with 0 percent desired (objective).						
BIT must be capable of annunciating all critical failures to the aircrew and storing fault data in nonvolatile memory for recall by operators and maintenance personnel.		XT	XT	XT	XT	
(2) Maintenance Actions. Air Force two-level maintenance (organizational and depot support) will apply.		C	C	C	XT	
(a) Manpower. The system should require no increase to current manpower or skill levels.		C	C	C	XT	
(b) Support Equipment. Common support equipment will be used.		C	C	C	XT	
(c) Technical Data. Existing commercial or military technical manuals will be provided and reviewed by the Air Force, as applicable. Technical data in military format consistent with current aircraft technical manuals shall be required in the event existing manuals are unacceptable or not available.	Basic ABI manuals will not be part of Aircraft TCTO. May be separate TCTO. If embedded then they will be part of Aircraft	C	C	XT	XT	
In any event, references or changes, as required, shall be incorporated into appropriate flight manuals.		XT	XT	XT	XT	
Maintenance technical data shall include system/LRU theory, system wiring diagrams, LRU removal and installation, and illustrated parts breakdown.		C	C	C	XT	Best Commercial
A continual update service for commercial manuals, if used, shall be provided.		-	C	C	XT	Best Commercial
3) Combat Support Requirements. None		N	N	N	N	
Critical System Characteristics. **(**1) Mandatory Characteristics. System must be capable of receiving TDDS (current and future architectures), TIBS, and TADIL-A/J with a multichannel radio integrated with embedded cryptological materials appropriate for each of the listed devices.		**C** Tdil-A	**C** Tdil-A	**C** Tdil-A		TADIL-J will be provided FY 99
The system must be capable of processing the data and displaying the information graphically on a flat-panel display.		C	C	C	XT	
The system must be capable of receiving two simultaneous external		C	C	C	XT	

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signals through data ports from an external radio and cryptological materials device.						
(28T) The system software and language must be able to process and display situation information from the external sources and provide replanning capability (best commercial solution is threshold).		28T	28T	28T		Possible "PFPS derived code will meet greater functionality in P4
The flat panel display must have sufficient resolution (equivalent to 1280 x 1024) to allow reading the information available on standard DMA digital charts as well as NITF.		C	C	C	XT	
The system must have a built-in P(Y)-code GPS receiver.		C	N/A	C Comm		Customer has agreed that commercial GPS is adequate but needs access to external Mil GPS
The system must have a "snap-on" or "carry-on/carry-off" capability. The system will not be permanently installed on AMC aircraft, but used on an "as required" basis.		C	N/A	C	XT	
The user system interface (USI) must allow for easy operation by a crewmember throughout the mission profile while wearing flight gloves, cold weather gear, or chemical and biological (NBC) protection gear.		C	C	C	XT	
(29T) Control and display devices must be compatible with night vision goggle use (threshold).		29T	29T	29T	-	
2) Electronic Counter-Counter Measures and Wartime Reserve Modes. None.		N	N	N	N	
3) Electromagnetic Compatibility. (30T) The system must be EMI/EMC compatible with other onboard systems (threshold).		30T	30T	30T		
4) Natural Environmental Factors. (31T) System must have full mission capability in all aircraft environments inflight or on the ground (threshold)	Expolsive Decomp C130 Vibration	31T	31T	31T		
5) Security. a) Physical Personnel, and Industrial Security. This system and its operation shall meet Air Force requirements established in AFI 31-101V1. Physical security Program; AFI 31-209, Resources Protection Program; AFI 31-401, Managing the information Security Program; AFI		32T	32T	32T	XT	

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31-501, Personnel Security program Management; and AFI 31-502 Personnel Security Program. (32T) Configuration management shall be used to ensure the integrity of firmware, and software under configuration management control shall provide a level-of-protection to assure integrity (threshold)						
Unclassified hardware, software, or documentation of the system will be protected if access to such hardware, software, or documentation reveals classified information, or access provides information that may be used to eliminate, circumvent, or otherwise render ineffective the security safeguards for classified information.		C	C	C	XT	
b) Communications Security (COMSEC). (33T) The system will meet the minimum COMSEC requirements of AFSSI 5102, the Communication Security (COMSEC) Program (Future AFI 33-202) for accountability, access, and data integrity based on the highest level of classified processed by the system. The system shall also met the COMSEC requirements established in AFSSI 4100, Communication Security Program (Future AFI 33-201). When all classified material has been zeroized, the equipment will be treated as a Controlled Cryptologic Items (CCI) IAW AFSAL 4001, Controlled Cryptographic Item (CCI) and AFI 23-101, Centrally Managed Equipment(threshold.		33T	33T	33T		
(34T) The system will have internally imbedded cryptologic security systems keyable via standard field devices (threshold). (34O) The radio will have automatically keyed, internally embedded, cryptologic security systems (objective).		-	34T	34T		
(35T) To prevent the compromise of classified information contained in system memory or the unauthorized access to the system's cryptographic secured communications systems, the system must provide the user a means to quickly clear all data and crypto keying materials from the system in a tactical emergency (threshold). This technique must preclude system use or data retrieval from magnetic media, system memory, or display devices should the system be captured or downed by enemy actions		35T	35T	35T		

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(c) Emission Security. The system will meet the Air Force requirements for emission security defined in AFI 33-203.		C	C	C	XT	
d. Computer Security (COMPUSEC). The system will be designed to meet the COMPUSEC requirements of DoD Directive 5200.28, DoD – STD-5200.28, and AFI 33-202 for accountability, access, and data integrity based on the highest level of classified data to be processed by the system. The specific level of protection implemented will be based on the risk and cost analysis to determine the most economical way of providing the necessary protection. The system design must ensure there is no degradation of performance resulting from implementation of the automated system security features.		C	C	C		
(6) Environmental and Human Health Requirements. (36T) All system materials and processes will be identified and evaluated for impact on health and environment. The system must be in compliance with federal environmental and human health regulations (threshold).		36T	36T	36T		
5. Integrated Logistics Support (ILS).		**N**	**N**	**N**	**N**	
a. Maintenance Planning. System must be designed to ensure ease of maintenance. All like components must be directly interchangeable.		C	C	C	XT	
(1) Equipment location should preclude the need for ladders, maintenance stands, or high reach support equipment during inspection or LRU removal/replacement, and only simple tools should be required for access.		C	C	C	XT	
Equipment will adhere to a "one-deep" packaging concept in which the removal of one LRU does not require removal of another LRU.		C	C	C	XT	
(2) All system and LRU failures identified by BIT shall be stored and be capable of being downloaded from the system. This includes manually initiated and continuous BIT,		C	C	C	XT	
and snapshots of operational parameters at time of failure.		C	C	C	XT	
(3) Maintenance Concept. Two levels of maintenance (organizational and depot support) will be used.	levels organization and depot level- should identify	C	C	C	XT	

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b. Support Equipment. Support equipment requirements for all levels of maintenance will be limited to common/standard and/or off-the-shelf test equipment.	does this include any special tooling	-	C	C	XT	
c. Human Systems Integration (HSI).						
(1) HSI will be validated by a DoD laboratory analysis. Part of this study will examine the graphical user interface (GUI). GUI analysis will initially be provided by a core group of users, then validated by a larger sample group of field users.	CUBE & Battlelab reviews	-	C	C	XT	
(2) Operational and Maintenance Training Concept. The Air Force will work with the contractor to develop a system/ operator-training program for operators and maintenance personnel.		C	C	C	XT	
(a) Type 1 operator training will be required to support initial fielding and an initial cadre instructor.		C	C	C	XT	
(b) Type 1 maintenance training will also be required to support initial fielding and an initial cadre of Air Education and Training Command (AETC) instructors.		-	C	C	XT	Contactor training
(c) Training Methodology. TBD.						
(3) Operators and maintenance personnel will be able to perform their functions while wearing chemical and biological protection gear.		XT	-	C	XT	
d. Computer Resources. New computer resources and software shall be kept to a minimum.		C	C	C	XT	
(1) (37T)All memory, timing, bus loading, and input/output of new systems should be adequate to provide 50 percent spare capability upon delivery (i.e., 50 percent of delivered memory is spare) and 100 percent growth capability without future modification (threshold).		37T	37T	37T	-	
(2) All new software and hardware shall be documented, maintainable, and suitable for competitive/"blue suit" follow-on support.		C	C	C	XT	
3) The computer resources life-cycle management plan (CRLCMP) will be developed by the operational, supporting, and implementing organizations. The approved CRLCMP is the planning document for computer resources support.	ABI will folow TBMCS process as code is maintained by TBMCS	C	C	C	XT	
(4) (38T) The power and cooling systems shall permit full utilization of		38T	38T	38T	-	

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installed memory and processing capacity without modification (threshold).						
e. Other Logistics Considerations.						
(1) Supply Support. Spare parts must be carried in the standard supply channels available to units that own or operate the systems. The existing Air Force and DoD supply systems will support the system.		-	C	C	XT	
Initial spares shall be available at time of system delivery.		C	C	C	XT	
(2) Facilities. Existing facilities shall be used to the maximum extent possible.		C	C	C	XT	
(3) Special Packaging, Handling, and Transportation Considerations. This system will not generate any new special packaging, handling, or transportation considerations. Packaging shall be adequate to prevent damage to LRUs during transportation.		C	C	C	XT	
(4) Unique Data Requirements. None		N	N	N	N	
(5) Engineering Drawings. Level 3 quality drawings will be required only for newly developed items and be supplied to the hardware depot for potential reprocurement actions.	Since the equipment is COTS we will not buy level 3 drawings	Lvl 2 Best Comm	Lvl 2 Best Comm	Lvl 2 Best Comm	Lvl 2 Best Comm	
Infrastructure Support and Interoperability. a. Command, Control, Communications, and Intelligence. The system must interface with CIS and AFMSS mission planning subsystem (MPS) and AFMSS portable mission planning system (PMPS) through existing data ports, floppy media, or PCMIA.		C	C	C	XT	MPS in P3
b . Transportation and Basing. Systems will be installed on AMC aircraft and flown worldwide. No special transportation or basing will be required.		C	C	C	XT	
c. Standardization, Interoperability, and Commonality. It is desirable the system be a multi-service used system to allow for technical interface, logistics support, and joint use.		C	C	C	XT	
d. Mapping, Charting, and Geodesy Support. Standard digital DMA charts will be used on this system without any special pre- or post processing requirements.		C	C	C	XT	
e. Environmental Support. No environmental support is required.		C	C	C	XT	

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Force Structure. The initial number of systems planned for fielding to support AMC units (active and ARC) is 65. However, the usefulness of this system will dictate future buys to significantly increase the number of units, conceivably to as many as 400 for AMC use alone. Interest by other services would require a further increase. FY# OPERATIONAL# SPARES 97 12 1 98 12 1 99 12 1 00 12 1 01 12 1	Should we identify potential users and customers?	N	N	N	N	
Schedule Considerations. **a. Initial Operational Capability (IOC)/Full Operational Capability (FOC) Actions.**(1) IOC will be considered complete when the following actions have occurred: (a) Delivery of 25% of the total required assets, sufficient to support a limited contingency (b) The system's training programs have been established in all designated training avenues. (c) Air Force organic logistics support for initial spares replenishment has been established. d) Technical Orders (TOs) and other necessary supporting documentation have been approved and are available to the users.		**-**	**-**	**10**	**14**	**Based on funding IOC will occur in FY99**
(2) FOC will be considered complete when the following actions have occurred: (a) All required systems are fielded. (b) Training programs have been changed/updated to reflect lessons learned during IOC. (c) TOs/operating manuals have been changed/ updated to reflect lessons learned during IOC. (d) Follow-on equipment and sub-component spares/repair parts stocked at the appropriate depot levels.		N	N	N	N	

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(e) Supply support has been expanded, as necessary, to accommodate increased numbers, usage, and maintenance of the system.						

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